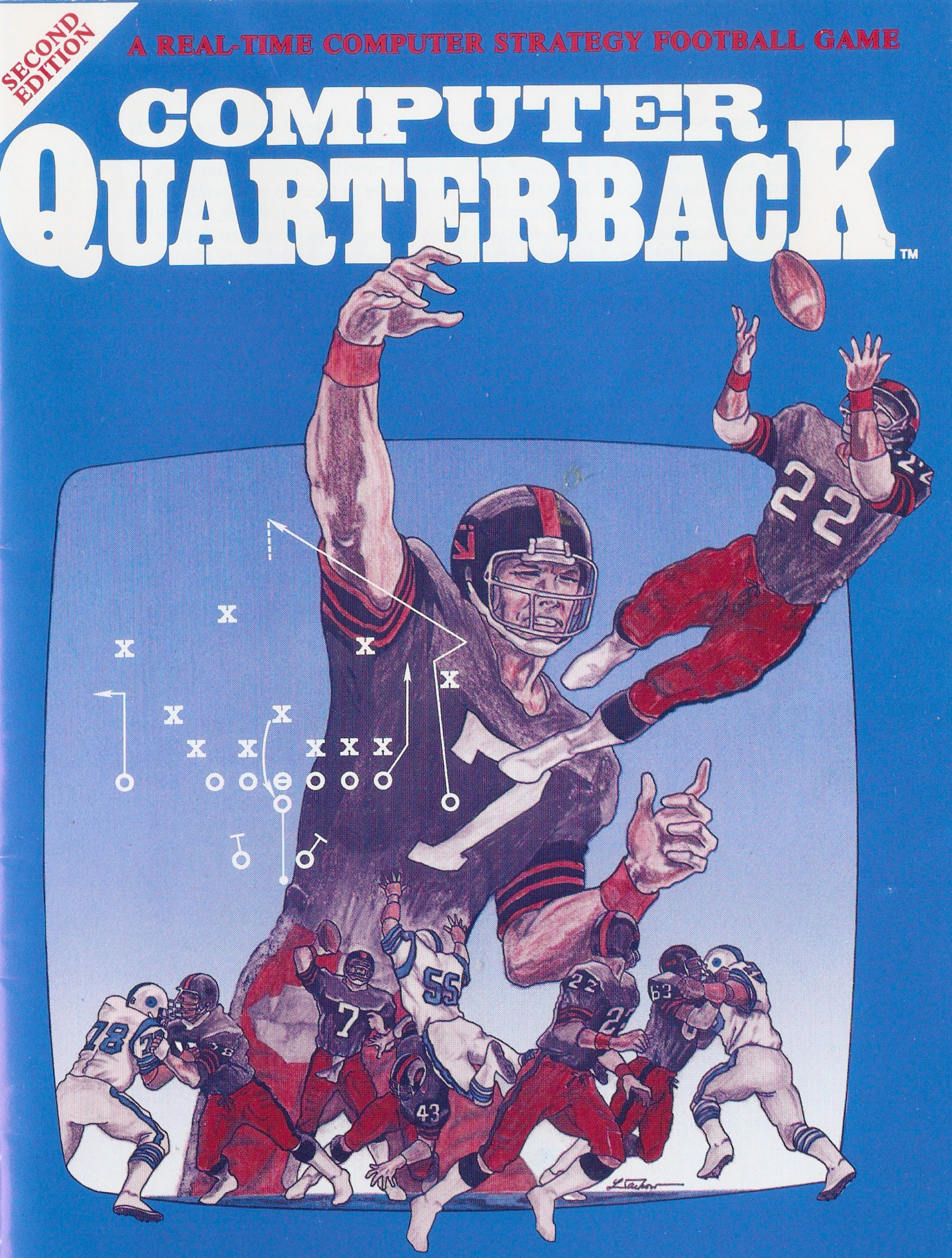
SECOND EDITION

A REAL-TIME COMPUTER STRATEGY FOOTBALL GAME

COMPUTER QUARTERBACK™



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CONGRATULATIONS! YOU HAVE JUST ACQUIRED THE MOST SOPHISTICATED STRATEGIC FOOTBALL GAME EVER PRODUCED! So you probably want to get on with playing the game and not "waste" time reading this healthy manual. Well, be our guests! If you really know your football, there are probably only a few paragraphs you need to read before you can play a Semi-Pro game: START UP; THE DISPLAY; KICK-OFF; and PLAY SELECTION. You can come back and pick up the rest when you need it. Playing this game is this simple! But mastering it is another matter. The information is here to make a beginner a real competitor. If you don't need it, show it to your friends.

INTRODUCTION

This game offers true realism in a very playable format! Two players compete by selecting plays and then watching the animated action of their teams clash on the gridiron. The use of the game paddles allows each team to enter their plays in secret (as if in their respective huddles) until the offense "hikes" the ball. But, if the quarterback lets the 30 second play clock run out, a "delay of game" penalty is called. When both teams come up to the line of scrimmage, each player can see his opponent's alignment and adjust to it. Faking, stunting, and shifting are all included in the pre-play action.

What sets this game apart is what goes on behind the exciting animated display! Reams of data sheets, months of analysis and all the sophisticated tools of systems simulation were used to create totally realistic outcomes for each play. Even if both players select the same plays repeatedly, each outcome will be unique. The pass may be intercepted; the quarterback might be trapped; the receiver could catch the ball and run for additional yards; or the pass may be incomplete. Despite this wide variety of potential outcomes for a given combination of offense and defense, you can normally expect certain predictable results. For instance, a screen pass against a blitzing defense will usually result in a completion for a big gain. Interception, in that case, represents a remote possibility.

There are three options available with this game: Semi-Pro, Professional, and Computer opponent. The Semi-Pro version has 18 offensive plays and 14 defensive plays. The number of minutes per quarter can also be specified so that a quick game can be played during a lunch hour.

For the true football fanatic, the Professional version represents the total challenge of the game. This version has 36 offensive plays and 24 defensive plays. In addition, the defense may select to "double-team" receivers or change the "spread" of its line to better protect the center or outsides. "Game films" are also included to allow after-the-action analysis.

With the Computer version, you can play a Semi-Pro game against the infamous Robots or any other team you choose. They will be ably coached by your personal computer. In addition each version allows the use of teams with unique characteristics The team can be one of the historical NFL teams available from SSI on "team disks". Or you can draft your own team to fit your playing style.

NOTE: All NFL rules as of Spring 1980 apply.

START UP

On the Apple to start the game simply boot the disk using a "PR#n" where "n" is the slot your disk drive is in (often "6"). On the C-64 to start the game type LOAD "*",8 and press RETURN. When READY appears type RUN and press RETURN. On the C-64, insert joystick or paddles into port #2. (Second joystick, if used, plugs into port #1.) You will be presented with a menu from which you may select to PLAY THE COMPUTER, PLAY A TWO-PLAYER GAME, or INITIALIZE A DATA DISK. Just type in the number of your selection and press "RETURN". The first time you play (and anytime you want to make another data disk) you must select item 3 to make a blank disk ready for use with this game.

To play a Semi-Pro version game with standard teams (against either the computer or another player), you need only follow a few instructions given by the computer and you will be on with the game. If you and your opponent want to use unique teams, you will need to consult that section.

SEMI-PRO VERSION

In this version of the game, there are 18 offensive plays and 14 defensive plays. These plays were selected from the total list of 36 offenses and 24 defenses (in the Pro version) to provide a challenging game that is easy to learn. A play sheet enclosed with this package displays each of these plays and their fixed identification numbers. Also provided is a summary gain chart that can be useful in discovering the characteristics of each of the plays against each of its opponents. For a more complete understanding of the plays, consult the OFFENSE and DEFENSE sections of this manual.

The following instructions also apply to the Professional and Computer versions (in addition to items covered in their respective sections of this manual).

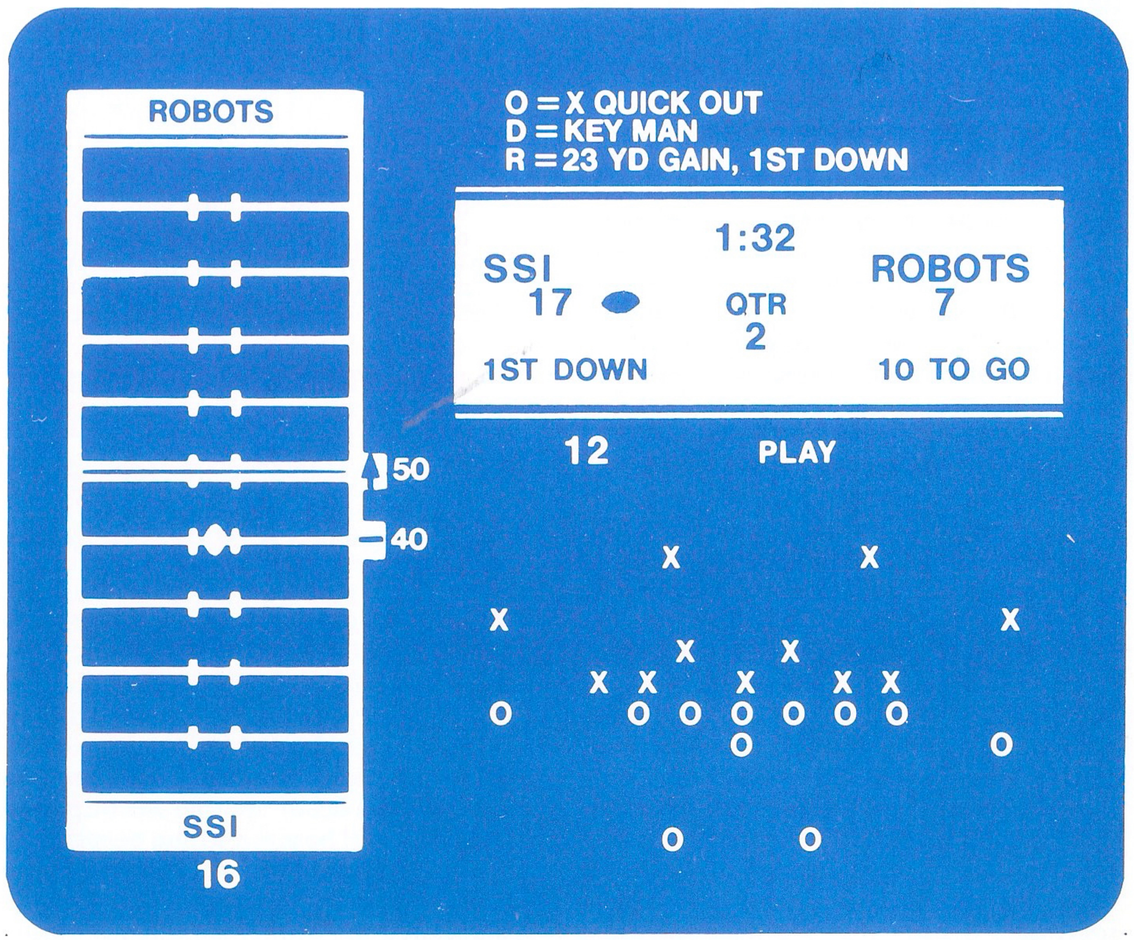
THE DISPLAY

Below you will see a copy of the screen as it is displayed throughout the game.

The left part is the playing field. The ball is positioned to the nearest 5-yard mark on the field. To the right sideline is the actual yard position of the ball preceded by an inverse "–". The first down marker is similarly shown by an "up arrow" followed by its actual yardline position. The offensive team always has the goal at the bottom and the defensive team the one at the top. This is the quarterback's perspective (always looking up the field) and makes it a little easier to visualize plays since the strong side is always right regardless of who has the ball. Just below the field is the "play clock" that shows the number of seconds left before a delay of game penalty will be called.

The upper right portion of the screen shows the previous offense ("O:"), defense ("D:") and result ("R:"). Below that is the time (in minutes : seconds) left in the quarter. In the figure of the screen shown here, this quarter has 12 minutes and 9 seconds left. Next are the team names with their scores beneath them. The team with the ball has a football next to its score. Between the scores is the current quarter. The final line displays the down and the yards to a first down.

The section just below the scoreboard is the current display area. When plays are being selected, the numbers on either side of the word "PLAY" indicate the current numeric setting of each game paddle. The X's and O's below that are the "set" play and attempt to show each player his opponent's alignment in an enlarged view.



KICK-OFF

The kicking team has 30 seconds to decide whether to do a standard kick or try an onside kick. This is selected by setting that team's game paddle or joystick (C-64 only) to one extreme or the other. Once the selection is made, the player kicking may press the paddle or joystick (C-64 only) button to proceed or can wait till time runs out and the kick will take place automatically according to the last setting of the paddle. The ball will move on the screen to the distance of the kick. If the ball goes into the end zone, the receiver has 4 seconds to decide to run it out or take the touchback. This reply is given, similar to the kick-off, through the game paddle by turning the knob and pressing the button when a response is chosen. If time runs out, whatever answer was last displayed is automatically selected. Other than these two cases, you and your opponent simply watch the kick-off and the return from the sideline.

PLAY SELECTION

Plays are selected through the game paddle or joystick (C-64 only). The paddle or joystick (C-64 only) is set to the desired play number and the button is pressed to "set" the play. The paddle or joystick (C-64 only) may then be moved and, unless the button is again pushed, the play remains as set. The defense may "set" in this way anytime the play clock is running but the offense must wait till the clock is below 26 seconds left (since they must huddle after the play). When the offense first sets its play it immediately comes out of the huddle into its alignment and a "hut" is sounded. (The defense never makes any sound when it sets). From the time the offense is set, each player is looking at the formation of his opponent. Before then, the defense is simply "showing" a standard 4–3. To start the play going the offense must set the same play three times in a row. This is equivalent to the quarterback calling for the ball on the third "hut". If the offense wants to change its play, simply move the paddle or joystick to the desired play and start the three counts again. Each time the quarterback changes the play at the line (by changing the "set" play), there is a higher chance that someone won't get the signals and a "busted play" will result. When the ball is hiked (after the third set of any offensive play) the results will be displayed as they happen and the players can watch the outcomes of their scheming.

After a little experience with this play format, you should be able to handle your own input and selection easily and then you can concentrate on trying to "read" your opponent. You can watch for any subtle moves that may give away what was (or will be) selected. Such "cheating" is not discouraged since tactics like faking and "psyching out" are integral to the real game of football.

TIME OUTS

A time out may be called at almost any time during the game by simply pressing your "time out key". For the left player that key is the letter "Z" and for the right it is the "/" symbol. If a time out is called during the running of a play, it will not be acknowledged till the ball is downed. During a time out the clock is stopped and 1½ minutes are allowed for a rest. However, the player who called the time out may press his paddle button to shorten that wait and call time in. The number of time outs left to each player is displayed momentarily between plays in the space usually reserved for entering play numbers. If a player calls a time out when he has none remaining, the computer will "beep" to indicate that fact.

An official's time out may be called at any time by pressing the space bar. The game will be temporarily suspended but nothing will be changed. When the space bar is again pressed, the game will resume exactly where it left off. An agreement between the players as to when an official time out may be called should be decided before the game starts.

HALFTIME STATISTICS

After each half, statistics will be displayed summarizing the play of each team. These are meant for your entertainment and not as an absolute commentary on either team's performance. Only the final score is really important.

NOTE: The statistics shown at the end of the game reflect the performance of the entire game, not just the second half's.

OVERTIME

If both teams are tied after four quarters, one more "sudden death" quarter will be played. Each team will be given 2 time outs and the receiving team will be determined by a new coin toss. Whichever team scores first will be declared the winner.

PENALTIES, FUMBLES and INTERCEPTIONS

When a penalty occurs in the game, the team whom it's "for" (as opposed to against) makes the choice of accepting or declining it through his game paddle. Simply adjust the reply between "yes" (take the penalty) and "no" (decline it), and press the button when satisfied.

All penalties in the game are marked off from the original line of scrimmage.

It can be disheartening to see your perfect play called back because of a penalty or, worse still, to lose the ball when you know that it's just some damned random number generator in the computer that did it to you! But even this element is parallel to the real game because no team ever plans to fumble (or cause a penalty), it just happens. (Interceptions are a little more predictable because some passes are simply more vulnerable to certain coverages). The probability of such things happening varies from play to play but it is generally such a small proportion that it still feels unfair when it does come up.

MISCELLANEOUS ITEMS

Out of bounds: Runs to the sides have a 1-in-5 chance of going out of bounds; passes to the sides have a 30% chance; and true sideline passes end up out of bounds 85% of the times they are complete.

Minutes per quarter: The Semi-Pro version lets you specify the number of minutes per quarter you would like to play. This is very useful to allow a new player to try a quick introductory game before playing for real. However, ten minutes is recommended for any serious game to insure that the teams get a chance to try all their tricks and level out their play.

Pass Completions: The probability of completion of a given pass is reduced anytime one is attempted inside a yardage less than the average years gained with that pass. For instance a 30-yard pass will have a lower probability of completion the closer you are to your opponent's goal inside his 30. In addition, any pass inside the 20 yardline is 10% less likely and inside the 10 the reduction is 25%.

Defense out of position: when caught out of position, the defense attempts to adjust to a 4-3 key man alignment with reduced capabilities.

COMPUTER VERSION

THE ROBOTS

If you are dying to play a game but don't have a ready opponent, your computer will be glad to oblige through this version. The game here is identical to the Semi-Pro one. The only difference is that if you lose, nobody else needs to know!

When playing against the Robots (the computer team), you can shorten its time-outs by pressing its paddle button.

NOTE: The Robots have been programmed to play best with quarters lasting at least 10 minutes.

UNIQUE TEAMS

You may play any of the versions of Computer Quarterback with teams that have unique characteristics. These teams may be created by you or you may use actual historical NFL teams available on "team disks" from Strategic Simulations. At the start of any version of the game, you are asked if you would like to play with unique teams. If you answer "Y" then you will be asked if anyone needs to draft a new team (or revise an existing one). If you answer "Y" here, you will need to consult the "Drafting Teams" section of this manual. Once both players have teams on disk, you can continue by simply entering the name of the team you want to use. The team will then be loaded from disk and you will be given a chance to assign unique play numbers for use in the current game. You can make up your own numbers or let the computer pick them for you sequentially or randomly. This feature is provided to reduce your opponent's ability to "read" your signals. (In the computer version this option is unnecessary since the computer can't tell one number from another — or can it?).

Apple® owners: You may get a "hard-copy" of the play assignments and the team qualities if you have a printer that works with a "PR#." (**C-64™ owners** will see instructions on the screen.) Otherwise you will be given a chance to view and record that information by hand before the game continues. This entire process of drafting and preparing your special team for a game should be done in privacy. The only way a participant should be able to discover the quality of the opposition's players is on the gridiron (or from "game films" if they are available). Until the game (or the season) is

underway, your best weapon is the fact that your opponent does not know who your good and bad players are.

DRAFTING TEAMS

The first step in drafting your own unique team is creating a unique name — at least unique to a particular data disk. (If you enter a name that is already on the disk you will be allowed to revise that team). The name selected should be nine (9) letters or less and end with an 's' for grammatical agreement. In addition you may add a suffix that can serve as a special name or "secret password". If you wish to use a suffix, type a slash "/" followed by any letters or numbers (symbols are not allowed). The name and suffix (including the "/") will have to be entered exactly to load the team for use in a game but only the name itself will be displayed in the catalog and during the game. Thus, a name such as "STEELERS" with a suffix "/BRADSHAW" will require you to type "STEELERS/BRADSHAW" to load the team while only the "STEELERS" part will be used during the game and the catalog will show "STEELERS/". Numbers are the only exception to this since numbers in the suffix will be displayed in the catalog but not necessarily during the game. For instance if you are playing the teams "STEELERS/80" and "COWBOYS/80" the catalog will display the full titles but during the game only the names "STEELERS" and "COWBOYS" will be used. This approach allows you to create teams with secret codes or to use Strategic Simulations "Team Disks" without unnecessary numbers in the team names.

The next step is the allocation of money to buy teams. The players should have arrived at a mutual decision concerning how much (if any) handicap one player has in relation to another before starting this phase. A total beginner when facing an experienced player may be given the maximum funds to equalize the game. However, it is essential for realism during the game that players stay close to the average funds available. Two players who have both asked for double the average funds will not have nearly as realistic a game as if they had requested the average amounts.

After you have received your money, a screen will be displayed that shows the categories in which you may invest. The offensive backfield, the receivers and the kicker are identified individually and the remainder of the squad is made up of the offensive line, the linebackers, the deep backs and the special teams. For each of these individuals and groups a minimum cost, an average cost and a maximum cost is given. For a minimum investment in any category, you will get performance at 70% average. The maximum investment will buy 130% performers or 30% greater than average. (These values are based on years of human engineering analysis which has found that in any field of endeavor, 99% of the "acceptable achievers" range within plus or minus 30% of the norm.) The next column displays in inverse video the current investment which will be initially set to the average in each category. The last column shows the quality of player the current investment will buy.

You may change a value by typing in the desired number followed by a "RETURN", or you may leave it as is by simply pressing "RETURN" without any numbers (or use + to just go to the next item). You may also go back to a previous category by pressing the minus key ("–") at any time. In this way, you may go forward and backward, changing your investments until the money available equals the money spent (AMT. LEFT = 0) and you have the team you want. Any time you specify the kicker category, the question "FINISHED?" will appear at the bottom of the screen. If you answer "N" or do not have enough money to buy the qualities you asked for, you will get to start again at the top of the list.

Your team will then be written to disk where it can be used as often as desired. A team can also be "revised" simply by using the same team name when drafting a team later.

IMPACT OF THE DRAFT

The players' qualities affect the outcomes by affecting the values of the model for plays in which they are involved. In all cases, the higher the quality of your players versus your opponent's, the more favorable is the adjustment towards you. The following is a summary of the relationships of player quality to various elements of the game's model.

- "Break-away run" is the probability the runner will break into a deep gain. This is influenced heavily by the runner's quality and supported by the quality of his line. It is opposed heavily by the linebackers and they are supported by their line.

- Fumbles are adjusted up by the rating of the overall defense and are reduced by the quality of the ball carrier.
- The average gain on a rushing play is improved by the runner and his line and is opposed by the linebackers and their line. Runs in excess of the average are further adjusted by the runner versus the linebackers and shorter runs are revised by the conflict of the offensive line versus the defensive line. For instance, if the offense is rated at 130% in its runner and line and the defensive quality in the line and backers is 70%, then the average yards gained for a given running play will be increased by 60%, fumbles will be reduced by 60% and all other outcomes will be increased by 60%.
- Pass interceptions will be increased directly with increases in the quality of the deep backs (safeties and cornerbacks) and the linebackers but will be decreased by the qualities of the quarterback and the receiver.
- Trapping of the quarterback behind the line on passing plays will be reduced to a large extent by the offensive line quality and to a small extent by the quarterback himself. It will be increased by improvements in the defensive line's ratings.
- Pass completion percentages are improved equally by the quarterback and the receiver and are reduced considerably by the defensive backs (linebackers and deep backs) with aid from the defensive line.
- The average yards gained on a pass are a result of the receiver's quality versus the defensive backs. Long gains are found through the conflict of the receiver and the deep backs, short gains between the receiver and the linebackers.
- All kicks are directly related only to the quality of the kicker. (He represents both the punter and the place kicker). Runbacks and blocked kicks are determined by the opposition of the two special teams categories.

PROFESSIONAL VERSION

The Professional Version of this game offers the following features in addition to those of the Semi-Pro: three defensive alignment "sets" ("tight" to strengthen the middle, "spread" to cover the flanks, and "standard"); double-teaming of the split end, tight end, or flanker; 18 more offenses, 10 more defenses (making 36 offenses and 24 defenses) and creation of game films.

DEFENSIVE ALIGNMENT AND DOUBLE TEAMING

Both of these "settings" are entered as normal plays using the number you assigned them and remain in effect till they are given new settings. At the start of each possession the defensive line is set in a standard alignment and the defensive backs are not double teaming anyone. The "plays" to revise both of these settings may be entered any time before or after calling a "real" defensive play. A note informing both players that the defense has changed either alignment or double teaming will be displayed with the results of any play in which that change was important. If, for instance, the defense changed from a standard alignment to a tight one, that change will not be mentioned until the offense calls a run and the defense is in a keying line set.

The alignment only affects running plays on which the defense is not blasting, stunting, dogging or blitzing. Runs up the middle will be reduced by 10% for tight alignments and increased by 10% for spread ones. The opposite effects are imposed on a run outside.

Double teaming affects only passes where the defense is in standard man-for-man coverage and is not rushing any backs (dogging, blitzing or 6–1). A double teamed receiver will have the completion rate of passes thrown to him reduced by 30% plus a small increase in the chance of interception. However, while he is being double covered, all other receivers have a 10% greater chance of catching their passes.

GAME FILMS

The Professional version allows you to create a permanent record of all the action that takes place during a game in the form of "game films". You need a printer that prints at least 80 columns per line (and for the Apple® only, is turned on by a "PR#"). If you meet these criteria, after each play, the computer will print a line that consists of (from left to right): down situation before the play was run, yards to a first down before the play, absolute yard mark (the distance

the offense was from a touchdown before the play), the game clock setting when the 30 second clock started, the play called by the "left" team, the play called by the "right" team, the result of the play. A number of asterisks will mark the offensive team's column whenever a change in possession occurs. Headings for quarter and score changes will also be given. The permanent log provided by these "game films" should allow opponents a chance to review their strategies, uncover tendencies and prepare for upcoming games.

CLOCK CONTROL

Because you can play this game with virtually no physical exertion, players usually call plays in the first few seconds after the 30 second clock starts. In a real game this is seldom the case. With receivers straggling back from deep pass routes, players shuffling in and out from the sideline and everyone catching their breath, quarterbacks in the NFL use most of the 30 seconds allowed between plays. Thus, in a regulation (15 minute quarter) game, Computer Quarterback players would run more than twice the number of plays as a normal NFL game. To compensate for this, a provision is made to subtract a certain amount — called the inter-play delay — from the clock after each play regardless of the outcome. (In the last 2 minutes of each half only a fourth of this amount is subtracted after each play). In the Professional version you can specify the inter-play delay to be any amount; however, a figure of at least 10 (for 10 seconds per play) is recommended.

PLAYOFF GAMES

In regular season games, a single overtime period is provided to break ties after regulation time. If the game is still tied after that then each team is given a half a point in the standings. However, in playoff games, overtime periods are repeated indefinitely until someone scores. The Professional version facilities this by offering you a chance to continue after each overtime period.

LEAGUE PLAY

After over a year on the market, Computer Quarterback has spawned leagues for playing this game all over the country. The following are some hints for conducting a successful league.

You need at least 6 people to have a league. If you have around ten, you can form two conferences, and if you have 16 or more you can split the conferences into divisions.

You should have at least half as many computers and copies of Computer Quarterback as you have players, otherwise scheduling can become a nightmare and an imposition on the few Apple owners.

Appoint, elect or draft a commissioner to take care of preparing the schedules, maintaining the "game films" library, certifying the draft for each team, keeping the league treasury and generally coordinating the season. The commissioner should almost never be allowed to participate with a league team unless he/she is such a horrible player that knowing everything about everyone else's teams will still not help him/her win. (This job can almost be fun for a real organizer type).

Draw up a reasonably firm schedule and make any failure to meet it a forfeit. Don't schedule more than two games a week for any team and try to stick to regular days of the week. Make sure each team plays everyone in their division at least twice and all the rest at least once before you start playoffs. But don't make the season last too long or the losers will quit showing up.

Start the season with your teams drafted using only 75% of the average funds. Each week allocate another 5% of the funds to revise key players to higher quality ratings. Don't allow reductions in player qualities during the season (unless you are trying to include injuries in your league). In this way you can model the improvements that take place during the season as coaches work on particular positions and personnel.

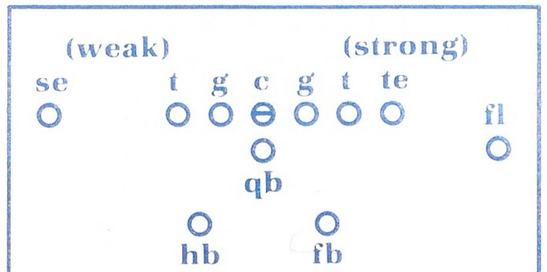
Maintain a file of "game films" on all league games and loan copies of two recent games to each player concerning their next opponent.

Charge a reasonable entry fee (like $5) to join the league and use the proceeds to pay for copying, to get a small trophy for the "Super Bowl" winner and to provide beer for all the spectators.

Contact Strategic Simulations if you form a league and come up with your own successful methods. Also let us hear from you about potential enhancements to Computer Quarterback for later updates. We are interested in anything that will help make our products more enjoyable to you.

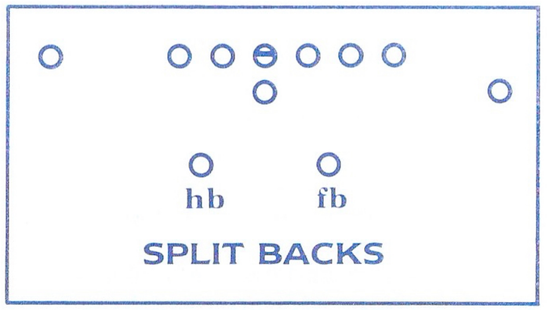
THE OFFENSE

Almost all pro football plays are run from what is called the "three end offense". This alignment is a development of the modern passing game, since it places three receivers at (or near) the line. These are: the split end, the tight end, and the flanker. This formation creates an unbalanced line that can also be very effective for running plays. The side with the tight end is called the "strong" side and the other the "weak". The line positions as shown below are (from left to right): split end, tackle, guard, center, guard, tackle, and tight end. The backfield is made up of the quarterback, flanker, halfback, and fullback.

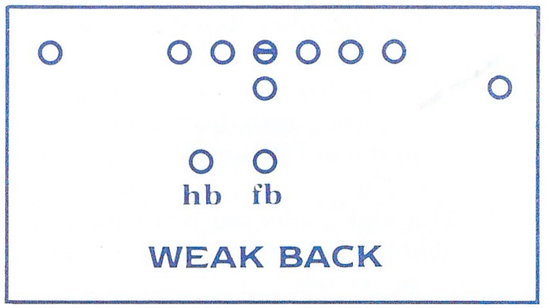


THREE END OFFENSE

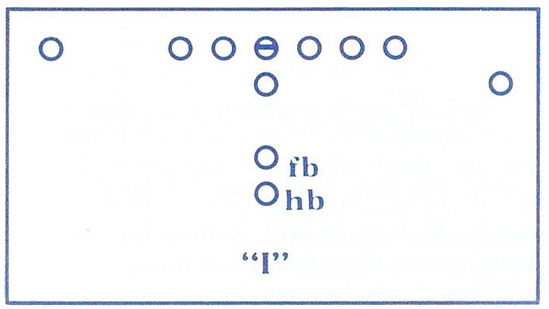
There are three main backfield shifts used to provide a variety of attacks from this offense. They are: split backs, weak back and the "I". All are shown below.



SPLIT BACKS



WEAK BACK



"I"

Although some professional teams occasionally flip the split end to make the opposite side "strong", for simplicity in this game the strong side will always be on the right.

THE OFFENSIVE PLAYS

RUNS

Cross Buck This quick run up the middle by the halfback is set up by a cross block of the left guard and center. It is good for a couple of yards. This play has the lowest chance of fumble of all your plays and like the dive is often the only thing that works against short yardage.

* **Dive** The dive is an up and over by the fullback. The line tries to wedge the defense back from the center. Short yardage is all this play is generally good for.

* **Middle Blast** The fullback blasts a hole in the center of the defense and the halfback follows him through. You can almost always count on a few yards, and against a blasting or stunting defense this play can break for good yards. This is a real "bread and butter" play for sustaining a good ground game.

Tackle Blast On this blast play the halfback leads through the hole between the left tackle and guard and is followed by the fullback. Gains here are slightly lower than the middle blast but it will get their attention if they are over shifting. A good conservative run play.

Power This play is like a quick sweep with only the weakside guard pulling and the halfback cutting on the inside of the tight end instead of going all the way around. This play should average around 5 yards but can also be caught in the backfield by blitzing backers. This is the beginning of the standard runs that can gain 5–10 yards but get riskier.

* **Slant** This simple off-tackle run is the most popular play in the NFL. The fullback slants to the weakside and, depending on the blocks that are made, may run straight ahead or cut inside or outside. This mid yard-gainer is popular for good reason.

* **Trap** The strongside defensive end is the target for this solid run. The halfback has good breakaway potential with this play — especially if the defense is blasting.

* **Sweep** This play is powerful! It is almost the only choice if you need more than 5

* indicates Semi-Pro plays

yards on the ground. If it goes as planned, the pulling guards will mow over the strong side of the defense, but since it's a little slow to develop, occasionally the runner will be caught in the backfield.

* **Quick Pitch** This play has great breakaway potential since the halfback can have the ball on the weakside before the defense knows what's happening. It can even beat them when they're looking for a run! But a bad pitch can mean a big loss or even a fumble.

  Sweep Weak This is the flip side of the standard sweep — only in the opposite direction.

* **Reverse** A tight end reverse can really burn a defense that has been "keying" repeatedly. This play will either gain big or lose big.

  Counter Drive This misdirection run starts just like a sweep but the fullback takes the ball to the weakside instead. It has a very high breakaway chance especially against a defense that has been heavily keying. This is a great play if you can afford the risks.

  Trap Draw This halfback draw works great against blasts, stunts or blitzes. It's a good way to slow down the pass rush but is almost useless against a key type defense.

* **Draw** The fullback carries on this draw play that is even better against a blasting line than the trap draw. It's not as bad against a keying line but the hole gets plugged if they're stunting.

SCREENS

FB Screen Right This screen is a powerful play even against a 6–1. It will hurt a rushing defense like a draw and when the ball is caught (about 65% of the time) the run is hard to stop.

* **HB Screen Left** This play is basically the same as the fullback screen except on the opposite side with one less blocker.

  X Quick Screen The split end gets the ball fast and gets a chance to run with this play. The gains aren't as big as with the other screens (there are only two blockers) but it's so quick there is rarely a loss.

PASSES

Note: For passes, the split end is referred to as "X", the tight end as "Y" and the flanker as "Z".

* **Z Slant** This is a high percentage pass which, when complete, will usually net about 10 yards. It's a good conservative play to mix with a running game to keep the defense honest.

* **X Quick Out** This is a sideline pass, slightly shorter than the Z slant. It's almost as good as a screen in stopping a blitzing defense.

  Backs Over Middle Both backs go out and the quarterback tosses the ball to the one that's open. This play is better than any other against *both* of the 4–3 zone rotations.

  HB Hook Left This toss to the halfback in the left flat is great against a strong zone and isn't bad against a weak rotation, either.

  Z Square Out For 15 yards against a man-for-man defense this pass to the flanker on the sideline is your best bet. Against a strong zone — forget it!

* **Y Cross** The tight end goes 10 yards deep and then cuts left almost parallel to the line. This makes it very effective against the zone. The stats on this say 44% complete for an average of 17 yards.

* **X Hook** This is another medium yardage pass. Although vulnerable to the weak zone, it really burns a strong rotation.

  Y Go Here the tight end runs like heck straight downfield and the quarterback just tries to connect. Good man-for-man coverage can mean an interception or at least a busted pass, but against the zone it should be good for 20 yards more than half the time.

* **Z Post** This "bomb" pass is why they invented zone defenses. Even if you get man-for-man coverage, the chances this one will be good are about 1 in 4. When it is, it'll be good for 40 or 50 yards. Use it when the defense is expecting a run or a short pass (6–1 or 3–4) and that will learn them. Watch out though, this is the pass deep safeties love to intercept!

  Z Flag This sideline pass can be broken up or worse by a strong zone rotation. Otherwise it's good one third of the time for one third of a football field.

  Z Fly This play is very similar to the Z post except that the fly pattern is a little better against a weak zone.

  Action X Fly This play action pass to the split end is good against a strong zone rotation but is even better against a man-for-man defense, especially if they have been keying a lot. Its chances are generally less than one in three of being complete, but the 45-yard gain may make it worth the risk.

  Action X Square Out A play fake and a quick toss to the left sideline make this play very good against man-for-man coverage

for about 15 yards, better than half the time. Like all other play action passes, its chances are increased against a defense that has been keying repeatedly, but it is very vulnerable to a blasting, stunting or blitzing defense.

* **HB Option** This is a fake sweep that is really a halfback pass to the flanker. This play takes advantage of man-for-man coverage and a defense that has been keying, but is weakest against a blasting line and a strong zone.

  HB Flare The defense will probably be tricked by this "slant" play that becomes a quick flip to the halfback on the left. It has the strengths of all the other play action passes mentioned but is quick enough to not be vulnerable to a rushing line.

  Action FB Fly This time you are showing something like a "trap" play and going 25 yards deep to the fullback. Unless you have an exceptional fullback the odds are less than 1 in 3 that he will catch it.

* **Flea Flicker** This play action pass includes three handoffs and a long pass to the split end. If nobody fumbles, and defense is not rushing, and maybe they have been keying so long they've gone to sleep, and if there is just a little tail wind . . . it might be good for 75 yards or more.

SPECIAL PLAYS

* **Field Goal** Your kicker is about average for the league. Inside the twenty he's fairly reliable, at the thirty he might make it, and in practice he even hits it from the forty (with a tail wind)!

* **Punt** Your punter has a forty-yard average. He can kick your opponent with his back to the goal line.

  Point After Touchdown This will be good for an extra point 95% of the time.

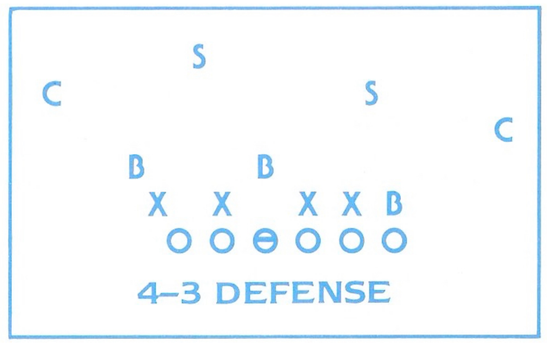
  Kick-Offs The average standard kick-off is 55 yards long and goes out of bounds about 1 in 20 times. One fourth of the on-side kicks attempted should be recovered by the kicking team.

OFFENSIVE STRATEGY

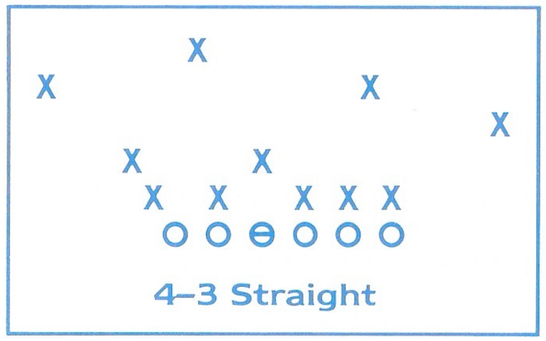
To play good offensive football you need to know the capabilities of your team. In this game that implies knowing the strengths and weaknesses of each of your plays. You have to be able at least to tell what offenses would be good against you. If he is playing conservatively by "keying" each play, then you need to know how to trick him with a misdirection run or play action pass. You need to watch for any tendencies he may have (such as blitzing on all third and long situations) and then adjust your offense to take advantage. You also need to avoid tendencies in your own game. If your opponent figures out that you go for a long pass often on first and ten, then he'll find a way to take a down from you (or even an interception). Finally, even when nothing seems to go right, don't get discouraged, because momentum changes throughout a game and at the very least you will learn something you can use next time.

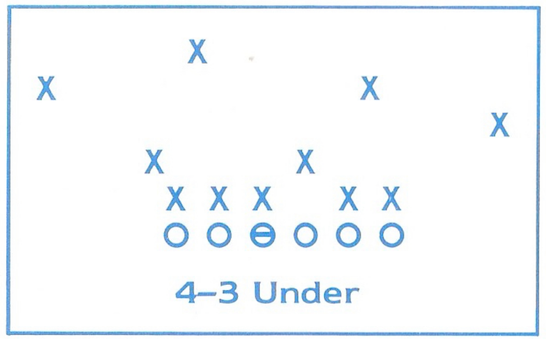
THE DEFENSE

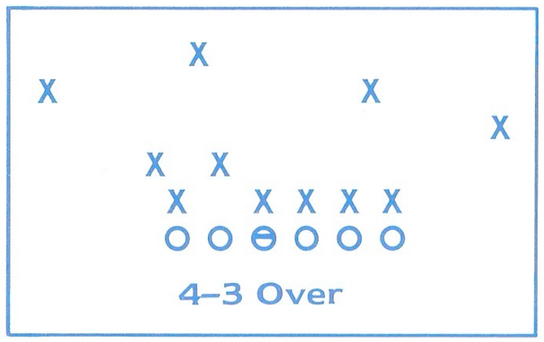
Although defensive play alone will not win a game, it can sure lose one for you. In most cases an offensive mistake will just mean the loss of a down or a few yards; a defensive error can put a quick six points on the scoreboard for your opponent. For this reason the modern defense in the NFL is considerably more complicated than in the days when receivers were covered man-for-man and everyone else just went for the ball. The basic defensive formation is called the "4–3" for the four linemen and three linebackers. The other four men are the deep backs: two cornerbacks (on the outside), and two safeties (in the middle). Those positions can be seen below with "S" for safety, "C" for cornerback, "B" for linebacker and "X" for lineman.



The strongside linebacker is positioned on the line opposite the tight end to counteract the "unbalanced" offense. There are three shift variations of this defense: straight, under and over.







There is one other variation to the 4–3 alignment called the 6–1 here. In this formation both outside linebackers move up to the line. This is used for blitzing or when a run is expected. If the play looks like a pass the line backers can drop back into a man-for-man coverage.

Another defensive alignment that is becoming more common in the NFL is the 3–4. The success of the Miami Dolphins and the Houston Oilers using this defense extensively has encouraged its addition into the arsenal of many other teams. A wide variety of shifts are used with the 3–4 to reduce its weakness to the run and to beef up the three-man pass rush by moving one of the linebackers to the line. These shifts are parallel to the 4–3 with over or under adjustments and thus are not part of this game. Only the 3–4 short zone play is included because of its unique advantages. There are other special-purpose formations that will be explained under the plays that use them.

THE DEFENSIVE PLAYS

Defensive plays are essentially just combinations of assignments for the line and deep backs. Thus, except for special alignments and special purpose plays, defenses can be easily described by a few key words that define those assignments.

LINE ASSIGNMENTS

Keying When the line is assigned to "key", it watches the offensive team and attempts to "read" the play. This is usually very effective against runs. It gives the defensive linemen some time to respond to the changes of the offense. This defensive line assignment won't really hurt the offense often, but also won't usually be hurt. However, the offense developed two types of plays that take advantage of a keying defense; they are the misdirection run and the play action pass. The probability of success of either of these offenses will increase as a defense repeatedly keys. (The tight, spread, and standard defensive alignments may be used in the Pro version with this type of line).

Blasting A blasting line does not key on anyone. The linemen rush straight into the offensive backfield and attempt to collar whoever has the ball. This makes the blast a much better pass rush than a keying line. Slow developing runs and play action passes are also very vulnerable to the blast. However, rushing linemen are easily trapped or nudged out of the way for a fast play up the middle. Thus, a blasting lineman may break up a play in the backfield or the defense may let a modest gain become a big one.

Stunting This is a twisting blast where the linemen on each flank go around either side of the respective offensive tackles. Plays using this defensive line assignment can dump the passer even better than a blast. The offensive blocking of certain runs (such as the trap and draw) is also disrupted, often catching the runner in the backfield. But the stunt, like the blast, is generally riskier than the key.

BACK ASSIGNMENTS

Man-for-Man In plays using this type of backfield, each defensive back is assigned to cover one receiver. Different defenders will cover the offensive backs, depending on where the backs go. If no backs go out, the linebackers help out against other receivers. This assignment is slightly better against the run than zones because the linebackers are watching the offense rather than rushing to get to their zones. For pass coverage, man-for-man is better against passes aimed at splitting zones. Overall, "man" coverage is often better than the wrong type of zone. (In the Pro version, this coverage also allows double teaming of specific receivers).

ZONES

In general, zones provide better pass coverage than man-for-man. They were introduced to combat the increased sophistication of the passing game. Better receivers, more diverse pass patterns and the increasing accuracy of passers have made zones a necessity in pass coverage. With a 4–3 defensive alignment, there is a variety of methods to arrive at the four short and three deep zones. For the purposes of this game, only two rotations are used — strong and weak. The paths used by the defenders to arrive at these two alternatives determine where the "seams" are and which passes will be more or less effective against them. Against runs, zones are just slightly less effective than man-for-man.

Strong Zone In this type of zone, the deep safeties rotate to the strong side (thus giving it its name) and the remainder of the backs move to their assigned positions. This rotation all but shuts down passes to the flanker (Z). Strong zone is especially vulnerable to passes to the weak side.

Weak Zone This rotation is similar to the strong zone but on the opposite side. Thus, passes to the weak side are less likely to be completed, and those to the strong side are more suce successful.

3–4 Zone The particular zone used with the 3–4 alignment in this game has 6 short and 2 deep zones. All types of short passes become almost impossible with this type of defense. Passes of medium length are covered at least as well as man-for-man coverage. However, deep passes are not covered very well. Running plays take advantage of the weak 3-man front and the dropping linebackers to add a few yards to the runner's gain; but a breakaway run against a 3–4 is less likely than against a 4–3.

Man-for-Man Short, Deep Zone This defense type provides man-for-man coverage with the addition of two deep zones made by the deep safeties. This combined coverage makes long passes very unlikely, but is slightly less effective than a standard "man" for short and medium passes. (Double teaming is not available with this play because the safeties have fixed assignments).

Dogging In plays with this backfield assignment, one or two of the linebackers rush into the offensive backfield along with the linemen. (The blast assignment for the line is assumed with all dog plays). The designation "strong" means the left (strongside) linebacker will blast. "Weak" stands for the right backer, "mad" for middle and "red" for the outside linebackers. As with the blast and stunt line assignments, backs who are rushing may miss the play completely or might throw it for a big loss.

SPECIAL ALIGNMENTS

4–3 Over Three of the four linemen "over" shift to the strong side and the middle linebacker moves slightly to the weak side. This shift is very powerful against runs to the strong flank and very vulnerable against plays to the opposite side. Both over and under shifts place a lineman directly on the nose of the center, and in that way, confuse the blocks of offensive linemen used to the standard 4–3. Thus, runs up the middle are less likely to succeed.

4–3 Under This shift to the weak side works just the opposite of the over 4–3. Plays to the weak side are halted and runs up the middle slowed. Passes are unaffected by either the over or under shift.

6–1 Key Man In this play, the outside linebackers in the 4–3 move to the line to stop a run. Although they drop back if it looks like a pass, the backs have already lost a step or two on a fast receiver. This makes the 6–1 less effective than the standard man-for-man against most passes and it really gets fooled by play action passes.

SPECIAL PURPOSE PLAYS

Safety Blitz Here the defense goes all out to dump the play in the backfield. All the linebackers and the strong safety blast in with the linemen to stop the offense for a big loss. But, if it doesn't work, the offense may have a big gain.

Short Yardage This play can really kill a drive that faces a third down and one or two. It is also useful for second and one; fourth and one, two or three; and anytime within your own 5-yard line. If you use it in any other longer yardage situation, you run the risk of a runner breaking for a big gain or of letting a receiver catch the ball just behind your tight line.

Prevent The entire backfield drops to cover medium and long passes with this defense. Prevent should be used when they need a big gain in a hurry. They can have the short plays and runs, but it is unlikely they'll get much more than 15 years.

Punt Return This play is used to return a punt or to rush any kick (field goal or punt). On a standard punt, you will be asked if you want a fair catch. You will have four (4) seconds to reply. It's a good idea to take a fair catch on a short kick to avoid the risk of a fumble. If the offense decides to get tricky and not kick the ball, you are in a type of short yardage alignment so they won't get too far.

DEFENSIVE STRATEGY

In playing good defense, just like in playing the offense, you need to know your team, your plays and your opponent's tendencies. You also need to know when to "contain" or even push back the offense and when to bend so you don't break. If the offense isn't too strong, you might get away with playing conservatively by keying and not giving away any big gains. But if they are really rolling over you, then it may be time to go on the "offensive" — using blitzes, blasts, stunts, overs, unders — or anything that will stop what you anticipate they will try. Then, when they have third and long, you can sit back and just take away the long plays.

DESIGNER'S NOTES

The development of "the world's best football game" has been a labor of love spanning several years. In 1976 I developed a much "looser" program on a Varian mini-computer and uncovered some of the difficulties in simulating a football game. Using that computer and all the other facilities of my employer, I analyzed hundreds of plays and thousands of outcomes. At that time I discovered the key statistical relationships that were eventually used in this simulation model. For almost a year I have spent the major portion of my "free" time attempting to implement all those good ideas into a playable game. The first major obstacle was creating some method of including unique team abilities. In playing earlier versions of the game, it was apparent that without such a "personal" touch, players would eventually tire of playing their mirror image. Every trick I developed against a given opponent could be turned against me unless our teams had their own special traits. Thus, the draft was included and the model revised to allow modification to outcomes based on key players.

However, my greatest and most urgent challenge came when SSI asked that I create a "solo" version that could be played against the computer. With only two weeks available, I had to find some way to create an intelligent programmed opponent. My experience with simulating cybernetic systems was helpful but the demand for urgency and quality almost inundated me. After a couple of "bright ideas" failed, I tried a standard optimization technique called weighted scoring. This seemed to work and I finished the program just in time for production. I will leave it to you to decide if I created an "intelligent" player.

Obviously I couldn't have done this alone, so I have to mention some of the support I received: Glen Ross, a retired football player and engineer, who helped add realism throughout; Wally Hall, a local sports-writer, who provided encouragement and data; the Apple Addicts computer club who helped in testing; and finally my wife and daughter for their patience and support.

TECHNICAL MODEL NOTES

This game is based on an original stochastic simulation model. Various fixed probability distributions and discrete values are used to generate outcomes in the game. The combination of all these processes creates very realistic results.

There are really three separate models used — one for each of the major types of offensive plays: runs, passes and kicks. For each running play against each defense there are five values used to generate outcomes. These are: the probability of a fumble, the probability of a breakaway run, the average yards gained (excluding breakaways), the standard deviation on the plus side and the standard deviation on the minus side. The last three items allow the creation of outcomes from a skewed distribution using a simple normalized random variable. Each of these five parameters is also adjusted in the Pro version by the quality of the players in particular positions. For instance, the minus standard deviation is influenced by the offensive and defensive lines while the plus standard deviation is the result of the conflict of the runner versus the defensive backs.

For passing plays, seven variables are used to determine the success of an offense against a defense. Four of these are used for each such combination of plays; they are: the probability of interception, the probability of pass completion, the probability that the quarterback is trapped, and the average yards gained when complete. Also associated with each pass play — one for each offense — are: probability of fumble, the standard deviation on the plus side and the standard deviation on the minus side. As with runs, each of these parameters is individually affected by the quality of the teams' players in key positions when the Pro version is being used.

Overall, this methodology allows a great deal of flexibility in the development of play outcomes. Non-continuous conditions can be easily modeled by adjusting certain parameters with other conditions. For instance the short yardage defense is very effective with only a few yards to a first, but is otherwise fairly risky. To maintain realism in this case, the probability of breakaway is increased according to the distance to first down for any yardage greater than the down number.

The third model, the one used for kicks, is really just a type of model. Each of the kicks and returns has its own polynomial regression formulas that create continuous yardages mimicking the real-life distributions.

In all, almost four thousand variables were calculated and stored in memory for use in the model. These are stored as single bytes since using standard floating point variables would have required as much as 20K of program space. Using these values in the model to generate outcomes means that even repeated combinations of the same plays will provide unique results. All yardages created are continuous integers that can theoretically range from positive infinity to negative infinity. However, since these yardages are normally distributed, they will tend toward their respective averages.

ABOUT THE AUTHOR

Dan Bunten is a registered professional engineer and systems consultant. His firm, Management Systems Engineering, was founded to bring together the tools of industrial engineering, systems analysis and data processing to solve problems in industry and government. He has extensive professional experience in the areas of systems simulation and mathematical modeling. His collection of well over a hundred bookshelf and war games further attest to his qualifications in the field of adult gaming. The advent of personal computers made possible the incorporation of his training in systems simulation with his lifelong interest in games and thus the creation of sophisticated games such as this one.

Dan lives with his wife Barbara, and daughter, Melanie, in Little Rock, Arkansas. His other interests include bicycling and backpacking. He is presently developing proposals for a business management game, an 18th century naval wargame and a strategic world energy simulator for educational purposes. Your comments regarding this game and further work in this field will be welcomed by him.

CARTELS & CUTHROATS is another fine game by Dan Bunten.

By affixing my seal hereto, I certify that this product was developed in accord with all currently accepted techniques in the fields of operations research, systems simulation, and engineering design; and I further accept full responsibility for the professional work represented here.

CREDITS

Game Design
Dan Bunten

Commodore 64 Conversion
LDW Software

Production
Susan Billings

Customized Disk Operating System
(Apple Version)
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Abra Type

Printing
A&a Printers and Lithographers

If you have any questions or problems regarding the program or game, please send a self-addressed, stamped envelope with your question to: *STRATEGIC SIMULATIONS INC, 883 Stierlin Road, Building A-200, Mountain View, CA 94043-1983.*

Or call our Hotline Number: *(415) 964-1200* every weekday, 9 to 5 (P.S.T.).

AVERAGE GAIN
(% COMPLETE)

		1 Key Man	2 Blast Man	3 Stunt Man	4 Key Strong Zone	5 Key Weak Zone	6 Key Man Deep Zone	7 Under Man	8 Over Man	9 3–4 Key Zone	10 6–1 Key Man	11 Safety Blitz	12 Short Yardage/ Punt Return	13 Prevent
Dive	1	1	1	3	1	1	1	2	1	2	1	1	2	2
Middle Blast	2	4	7	7	4	4	4	2	2	6	3	8	1	7
Slant	3	5	5	7	5	5	5	2	6	6	2	4	2	5
Trap	4	4	7	3	4	4	4	4	2	5	3	5	1	7
Sweep	5	5	6	7	5	5	5	8	1	6	3	5	2	6
Quick Pitch	6	4	8	9	4	4	4	2	10	5	4	9	1	6
Reverse	7	6	4	5	7	7	6	3	10	6	6	3	1	7
Draw	8	3	9	6	3	3	3	7	3	4	3	8	2	6
HB Screen Left	9	5 (75)	8 (75)	9 (75)	5 (76)	5 (70)	5 (75)	3 (72)	7 (77)	4 (70)	3 (75)	11 (78)	2 (75)	11 (78)
Z Slant	10	8 (68)	8 (68)	8 (68)	8 (33)	14 (66)	9 (72)	9 (68)	9 (68)	8 (28)	11 (72)	18 (75)	18 (44)	14 (77)
X Quick Out	11	6 (68)	6 (68)	6 (68)	10 (79)	6 (44)	7 (72)	6 (68)	6 (68)	5 (39)	7 (68)	14 (77)	14 (47)	12 (86)
Y Cross	12	10 (42)	10 (42)	10 (42)	15 (64)	15 (50)	15 (44)	10 (42)	10 (42)	15 (44)	14 (49)	22 (66)	23 (26)	14 (39)
X Hook	13	12 (41)	12 (41)	12 (41)	14 (66)	12 (36)	12 (37)	12 (41)	12 (41)	13 (50)	13 (44)	18 (47)	18 (22)	16 (33)
Z Post	14	36 (28)	36 (28)	36 (28)	50 (17)	50 (17)	25 (22)	36 (28)	36 (28)	54 (33)	50 (53)	57 (30)	41 (22)	27 (17)
HB Option	15	23 (46)	23 (33)	23 (33)	14 (42)	23 (55)	18 (39)	23 (46)	23 (46)	27 (44)	23 (68)	32 (22)	23 (36)	18 (30)
Flea Flicker	16	54 (18)	54 (18)	54 (18)	54 (18)	54 (18)	54 (11)	54 (18)	54 (18)	63 (39)	63 (42)	68 (18)	68 (32)	50 (6)

The above table is a considerable simplification of all the values used by the program to determine outputs. For instance, for a Sweep against a Key Man, the table shows an average of 5 yards. Using all the facts in the computer, however, this play will lose yards 13% of the time; it has a 77% chance of gaining 1 yard or more; a 49% chance of 5 yards; a 4% chance of 30 yards; and a 1.6% chance of a fumble. For a pass such as the Z Post against a Key Man which has a 28% completion rate, there is also an 8% chance of an interception; a 15% chance that the quarterback will be trapped behind the line; and a 1.5% chance of a fumble.